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ABSTRACT

This paper describes the instructional components of the Bilingual Access Program (BAP) at Elgin Illinois Community College, a federally funded 5-year project established to supplement regular vocational programs as a means to provide language training to limited English-speaking adults so that they leave with additional employable skills related to the employment opportunities in the nearby and Chicago metropolitan areas. Detailed descriptions are given of BAP's instructional delivery system, instructional materials, instructional design model for developing bilingual access support materials, instructional design model for developing instructional components, techniques for teaching the vocational class in an ESL context, and sequence of milestones within the BAP instructional design process. It is concluded that BAP is a very useful, cost-effective program with self-contained outputs which can be used anytime by an institution using its available human and non-human resources. Appendices include a list of regular vocational programs at the college, a list of instructional topics and objectives, an instructional analysis sheet, a list of Spanish instructional aids, a language skills assessment form, and material for vocabulary study. (Author/CMV)

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SYSTEM APPROACH TECHNIQUES FOR DEVELOPING BILINGUAL-VOCATIONAL AND VOCATIONAL ENGLISH AS A SECOND LANGUAGE CURRICULUM AT THE COLLEGE LEVEL

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Paper presented and workshop conducted at the 8th Annual International Bilingual/Bicultural Education Conference, National Association for Bilingual Education, Seattle, Washington, May 4-9, 1979.

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INTRODUCTION

This is a paper that describes the instructional components of the Bilingual Access Program (BAP) at Elgin Community College (ECC), Elgin, Illinois. The Bilingual Access Program is a federally funded five-year project being developed under an Advanced Institutional Development Program (AIDP) grant. Each fiscal year, during the five-year grant period, the Bilingual Access Project will implement different vocational programs into a bilingual mode. A total of ten programs will be completed, including 28 vocational and para-vocational courses, and they are to be offered in a continuous way. The Bilingual Access Program has been conceptualized and established to supplement regular vocational programs as a means to provide training to limited English-speaking adults so that the exiting participants can possess employable skills that are related to the employment opportunities existing in the Fox River Valley and Chicago metropolitan area. The Bilingual Access model is a unique approach for implementing regular college vocational programs into a bilingual mode to specifically serve a large Spanish-speaking population within and around the college's educational district.

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This paper describes in detail the Bilingual Access Instructional Delivery System, a General System Approach to Bilingual Access and Vocational English as a Second Language (VESL) Materials, the Instructional Design Model for Developing Bilingual Access Support Materials, the Instructional Design Model for Developing ESL/VESL Components, Teaching the Vocational Class in an ESL Context, Sequence of Milestones Within the Bilingual Access Instructional Design Process, the Paper's Conclusions and a series of appendices showing sample output products.

BILINGUAL ACCESS INSTRUCTIONAL DELIVERY SYSTEM

Figure 1 is a graphic representation of the different instructional components in existence within the bilingual access model, also identified as bilingual access instructional delivery system. Within AIDP, the bilingual access instructional delivery system was conceptualized as a means to provide technical training and English skills to limited English-speaking adults (LESA) supplementing human and non-human resources already available at Elgin Community College (ECC). The delivery system deals with the actual implementation of instruction within the classroom/laboratory learning environments and includes the following components within each vocational program: An English as a Second Language (ESL) pre-training course, vocational and para-vocational instruction in an ESL context, a series of Spanish/bilingual instructional support materials and bilingual student assessment instruments, and a VESL course unique to each vocational program. Each one of these components are analyzed in detail throughout this paper considering the pertinent development and implementation phases. Figure 1 also gives a perspective on the

BILINGUAL ACCESS INSTRUCTIONAL DELIVERY SYSTEM

BILINGUAL ACCESS PROGRAM/ELGIN COMMUNITY COLLEGE

ADVANCED INSTITUTIONAL DEVELOPMENT PROGRAM

1978-1982

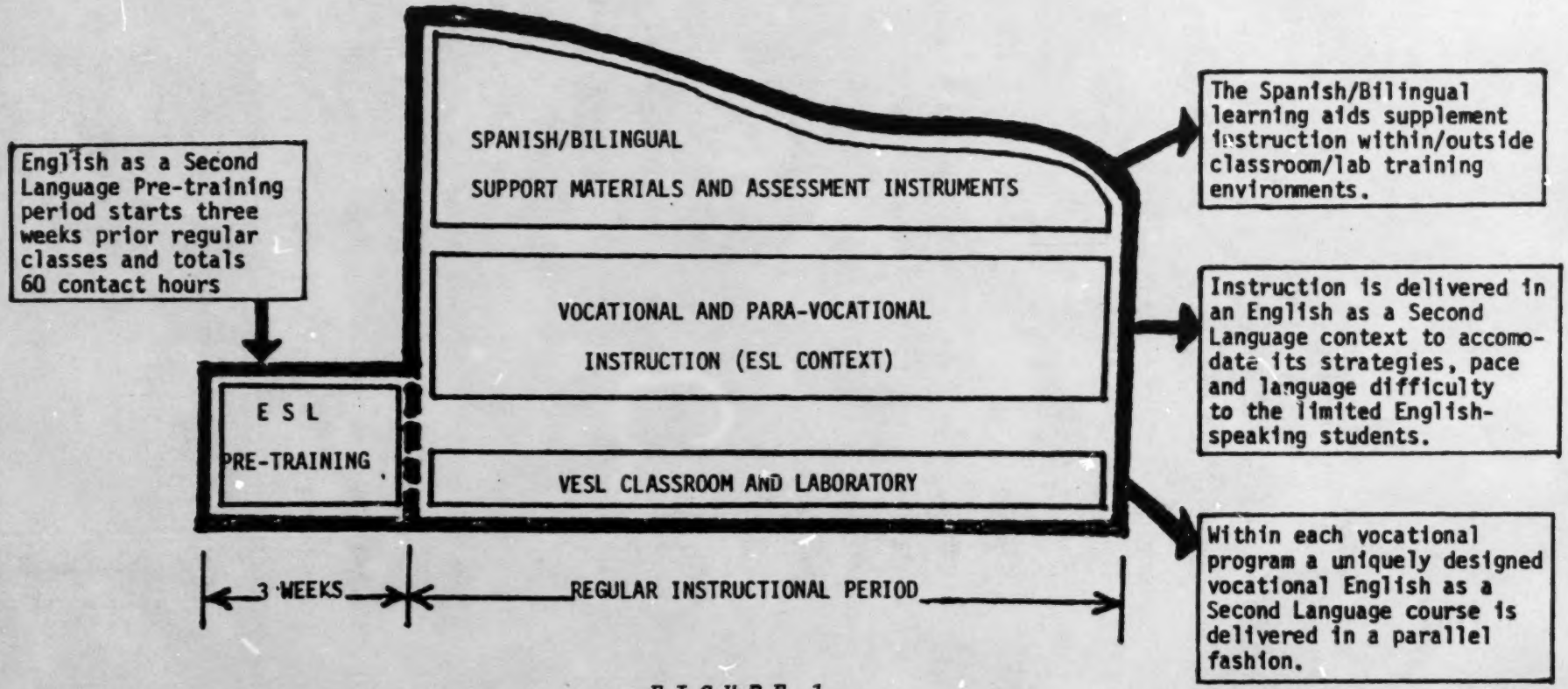

English as a Second Language Pre-training period starts three weeks prior regular classes and totals 60 contact hours
SPANISH/BILINGUAL
SUPPORT MATERIALS AND ASSESSMENT INSTRUMENTS
VOCATIONAL AND PARA-VOCATIONAL
INSTRUCTION (ESL CONTEXT)
E S L
PRE-TRAINING
VESL CLASSROOM AND LABORATORY
3 WEEKS
REGULAR INSTRUCTIONAL PERIOD
The Spanish/Bilingual learning aids supplement instruction within/outside classroom/lab training environments.
Instruction is delivered in an English as a Second Language context to accomodate its strategies, pace and language difficulty to the limited English-speaking students.
Within each vocational program a uniquely designed vocational English as a Second Language course is delivered in a parallel fashion.

FIGURE 1

supportive relationship of the various components within the bilingual model/delivery system. The college schedule evolves around two semesters and LESA students are expected to come into the Bilingual Access Program three weeks prior to the regular instructional period. ESL students' competencies are assessed to determine their entry point to the bilingual program. The ESL pre-training course as well as other ESL courses are available within the college so that LESA students could meet the ESL entry level skills requirements. ESL/VESL curriculum development and implementation are carried out by the college's Adult Basic Education program at the Community Outreach Placement and Assessment Center (COPA). The ESL/VESL curriculum development process is described extensively in forthcoming sections of this paper. Vocational and para-vocational instruction constitutes the second component within the delivery system. ECC vocational and para-vocational faculty members under various college's divisions carry on the classroom/laboratory training tasks. These instructional activities are conducted responding to an ESL context concept. An operational definition of the ESL context concept as related to vocational programs is proposed later on within this document. The bilingual and/or Spanish instructional aids constitute the third element within the bilingual delivery system, and are designed to supplement vocational/para-vocational instruction in a contingent manner, and to support LESA students' individual activities on a self-pace basis. As shown in Figure 1, Spanish/bilingual learning aids are to decrease in number as the student progresses throughout the semester. Within each course, bilingual student assessment instruments are also provided as part of the bilingual support materials. The VESL course is the fourth component

and it is uniquely designed to meet the language requirements specific to each vocational program. VESL instruction is delivered in a parallel fashion during the regular semester instructional period. Instructional coordination activities are carried on throughout the semester to insure a one-to-one correspondence between vocational instruction and VESL instruction.

A GENERAL SYSTEM APPROACH TO BILINGUAL ACCESS PROGRAMS AND VESL MATERIALS

Figure 2 shows the major subsystems within the BAP including the project's design and conceptualization and the project's curriculum design and development processes. The first subsystem is a Needs Assessment Study that was implemented to set up a valid and solid foundation to the bilingual project. Learner and community needs as well as institutional goals are the bilingual project's guiding points. Kaufman (1976) defined needs assessment as the determination of the gaps between current outcomes and required or desired outcomes based upon a referent of external survival and contribution, reconciles differences among the educational partners, and places the needs (outcome gaps) in priority for intended actions. The Bilingual Access Program proposal, which is available upon request, funded by AIDP is a 30 page document that provides the rationale under which is founded the bilingual access model, identifies programs and courses to be developed and implemented in a bilingual mode and delineates the milestones to be completed during the five-year period--1978 to 1982. Identified vocational programs and dates of implementation are included in Appendix I.

The second subsystem is named Bilingual Instructional Design and Development Process. Several tasks are accomplished within this process,

GENERAL SYSTEM APPROACH

BILINGUAL ACCESS PROGRAMS AND VESL MATERIALS

BILINGUAL ACCESS PROGRAM/ELGIN COMMUNITY COLLEGE

ADVANCED INSTITUTIONAL DEVELOPMENT PROGRAM

1978-1982

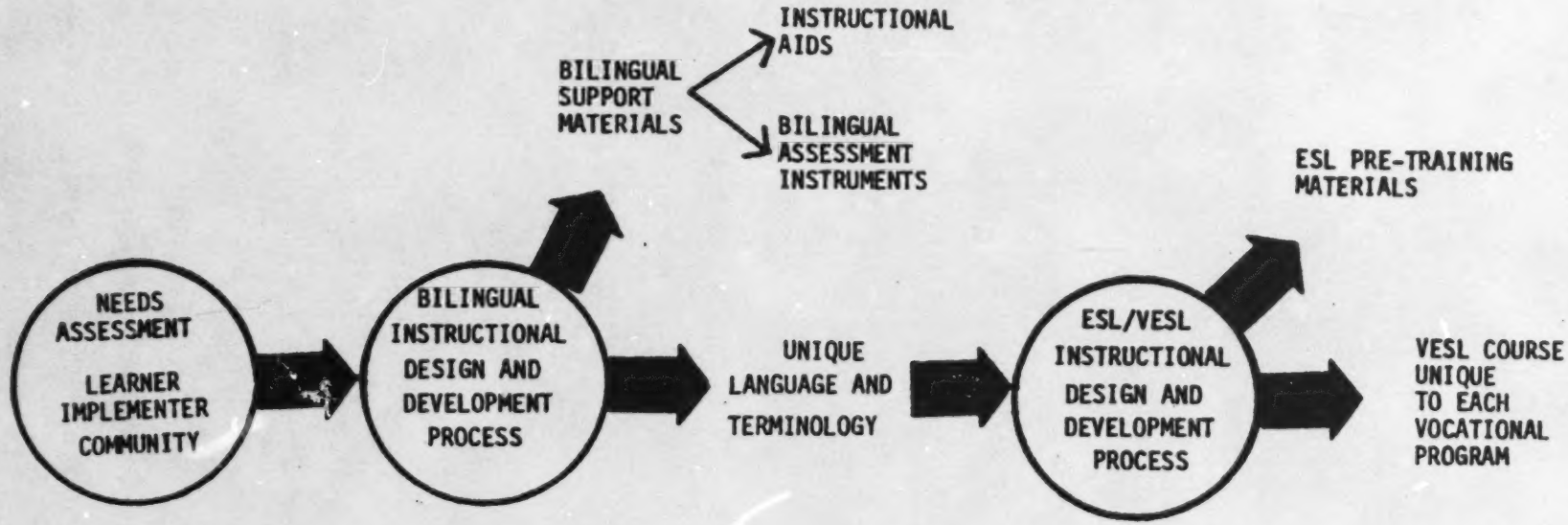


FIGURE 2

KOTESKY, 1978-79

although they revolve mostly around the content analysis of the identified programs and subject-matters. Subject-matter content and task analyses are conducted by the subject-matter specialist (SME) and the bilingual/ instructional designer/coordinator of the project based upon the "Instructional Design Model for Bilingual Access Support Materials" (Kotesky 1978, 1979). Major output results of this subsystem are: Bilingual support materials, including bilingual instructional aids and student assessment instruments, and the unique language and terminology pertaining to each vocational program. The element listed last constitutes a crucial part of the input information for the development of VESL components within each vocational program.

The third subsystem is identified as ESL/VESL Instructional Design and Development Process. The college's ESL Specialists[4] are involved in this process. A framework referent for the accomplishment of this developmental task is provided by the "Instructional Design Model for Developing ESL/VESL Components" (Kotesky 1978, 1979). Major output results of this subsystem are: The ESL pre-training course and a unique VESL course for each vocational program.

INSTRUCTIONAL DESIGN MODEL FOR DEVELOPING BILINGUAL ACCESS SUPPORT MATERIALS

The instructional design model for developing bilingual access support materials is shown in Figure 3 and specifically encompasses the following sequential components: 0.0 Conduct needs assessment, 1.0 Identify vocational programs and para-vocational courses, 2.0 Specify instructional goals, 3.0 Identify target population, 4.0 Conduct instructional analysis, 5.0 Develop bilingual student assessment instruments, 6.0 Identify/ develop Spanish-bilingual support materials, 7.0 Conduct formative

INSTRUCTIONAL DESIGN MODEL FOR DEVELOPING BILINGUAL ACCESS SUPPORT MATERIALS

BILINGUAL ACCESS PROGRAM/ELGIN COMMUNITY COLLEGE

ADVANCED INSTITUTIONAL DEVELOPMENT PROGRAM

1978-1982

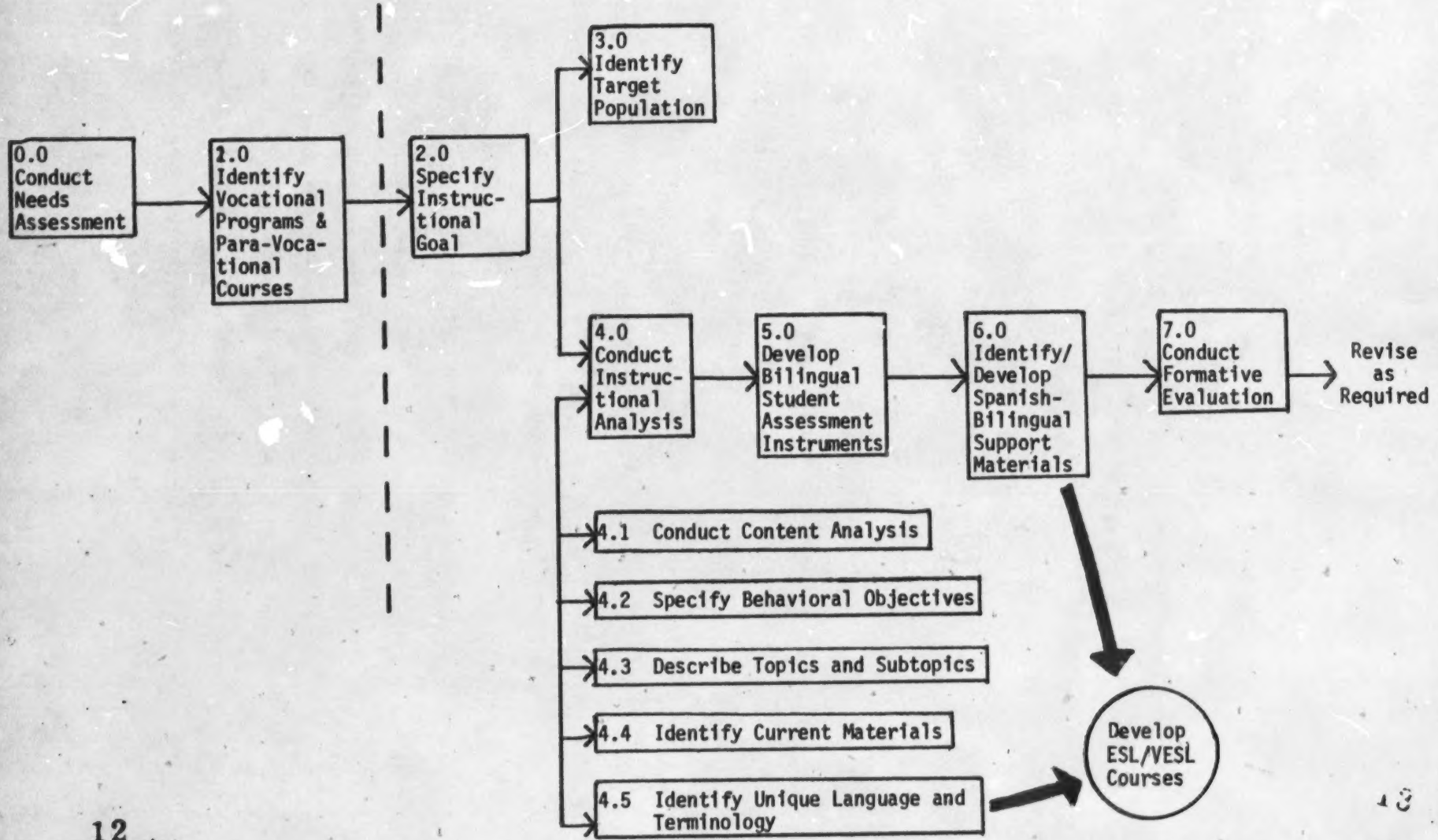

0.0 Conduct Needs Assessment
1.0 Identify Vocational Programs & Para-Vocational Courses
2.0 Specify Instructional Goal
3.0 Identify Target Population
4.0 Conduct Instructional Analysis
5.0 Develop Bilingual Student Assessment Instruments
6.0 Identify/ Develop Spanish-Bilingual Support Materials
7.0 Conduct Formative Evaluation
Revise as Required
4.1 Conduct Content Analysis
4.2 Specify Behavioral Objectives
4.3 Describe Topics and Subtopics
4.4 Identify Current Materials
4.5 Identify Unique Language and Terminology
Develop ESL/VESL Courses

FIGURE 3

evaluation, and finally a feedback mechanism or revision process. Components or steps 0.0, 1.0, and 3.0 are considered a given framework stated within the proposal since they are an integral part of the BAP/AIDP proposal. Specific instructional goal(s), component 2.0, includes statement(s) of participant's achievement at course completion. In general, it can be said that these statements should not necessarily be expressed in measurable behavioral terms (see Mager, 1972). Following is an example of an instructional goal specified within Food Production I course, Culinary Arts Program: "The participant will acquire experience in the preparation of entrees, soups, salads, sandwiches as well as experience in sanitation procedures." Component 4.0 is central within this design model. The following are subactivities carried out within this component:

4.1 Conduct Content Analysis
4.2 Specify Behavioral Objectives
4.3 Describe Topics and Subtopics
4.4 Identify Current Materials
4.5 Identify Unique Language and Terminology

For each course, a completely revised and updated course outline is developed. (See Appendix II, which shows sample pages of the Welding I course outline.) This is an essential task to be accomplished since in most cases it has been found that course outlines constitute a delineation of broad instructional tasks. The subject-matter content analysis process, therefore, helps identify many activities and subactivities that are expressed in a written form, thus generating a course hierarchical structure containing a series of subordinate and superordinate skills. The instructional analysis, component 4.0, encompasses content analysis and task analysis activities. Subcomponents 4.1 through 4.5 are accomplished

using the instructional analysis forms shown in Appendix III. During the development process, a continuous interaction is required between the SME and the bilingual instructional designer. Depending on each course semester-credit-hours, a range varying from 40 to 100 or more hours of interaction are required. Terminal behaviors are specified within each topic, and topics and subtopics are described in terms of classroom/laboratory training activities (see Mager, 1968; Gagne & Briggs, 1974). Current support materials being used by the English-speaking instructor within each topic and subtopic are also identified along with the related subtechnical and general terminology. All terminal behavioral objectives are later on fedback into the content analysis process to complete the course outline. Subtechnical and general terminology constitute an input element for the design and development of instructional situations within the VESL component in relation to technical information and concepts delivered by the vocational instructor. Component 5.0, Develop Bilingual Student Assessment Instruments, constitutes another unique consideration within this bilingual project to benefit LESA students. At least four assessment instruments per course are required by the project and the evaluation items are developed in one-to-one correspondence with the stated objectives and training activities. Identify/develop Spanish-bilingual support materials, which constitutes component 6.0 within this model, is more or less a continuous task after the instructional analysis is completed for one course. This particular activity is based primarily on the information sheets and may include: surveyed available resources appropriate to topics and/or subtopics, adaptation of available resources under copyright permission, translation of available materials under

copyright permission, internally produced support materials, combination of the above alternatives. The column entitled, "Tentative Support Materials for Bilingual-Vocational Program," is filled in within the instructional analysis forms as component 6.0 is completed. Several professionals contribute within the bilingual instructional design and development process, namely subject-matter specialists, English/Spanish translator, A.V. production specialists, clerical staff, bilingual instructional designer and project coordinator, and any other professional whose expertise may be required at different stages of development. An example of a supplemental bilingual learning aid is displayed in Appendix IV. Monitoring of usage of the learning aids is accomplished through a document entitled, "List of Spanish Instructional Aids," shown in Appendix V, which provides information to the student, to the instructor, and to Learning Resource Center personnel. Component 7.0, Conduct Formative Evaluation, is accomplished during the project implementation phase and falls beyond the scope of this paper.

INSTRUCTIONAL DESIGN MODEL FOR DEVELOPING ESL/VESL COMPONENTS

The third major subsystem within the general system approach is the ESL/VESL instructional design and development process. Directly related to this process is the instructional design model for developing ESL/VESL components as shown in Figure 4. Based on the model's component, "Specify VESL Instructional Goals," two major parallel activities are accomplished which are supportive to each other and they are: Develop ESL components and develop VESL components. Essential input information to this sequential model comes from component 4.0 within the instructional design

model for developing bilingual access support materials, previously described (see Figure 4).

Develop ESL Components. The ESL pre-training course is an integral part within the bilingual access instructional delivery system. English entry level skills have been defined for students enrolling in the Bilingual Access Program. According to the ESL assessment, LESA students may/may not be required to sign up for ESL pre-training courses. Other options are also offered at Elgin Community College through the COPA Center to those students below the English entry level skills requirements. The pre-training course has a technical focus and the instructional activities are created based on grammatical structures and patterns predetermined under component E, Identify Basic English Language requirements. Component G, Develop ESL pre-training course, includes the following instructional segments: grammar, listening and comprehension, mathematics, reading (Mrowicki, 1978 a). Moreover, it can be said that this 60 contact-hour, three-week-in-length course has been designed to meet the English language instructional requirements within most vocational fields to help LESA students prior to pursuing regular instruction within their selected areas of training.

Develop VESL Components. As it was pointed out earlier in this paper, a unique VESL course, having direct correspondence with the language requirements specific to each vocational program, is to be developed and later on delivered in a parallel fashion throughout the semester. Major sources of input information for VESL development are: the unique sub-technical and general language and terminology within each vocational program, the SME, and sometimes the vocational textbook. Vocational

INSTRUCTIONAL DESIGN MODEL FOR DEVELOPING ESL/VESL COMPONENTS

BILINGUAL ACCESS PROGRAM/ELGIN COMMUNITY COLLEGE

ADVANCED INSTITUTIONAL DEVELOPMENT PROGRAM

1978-1982

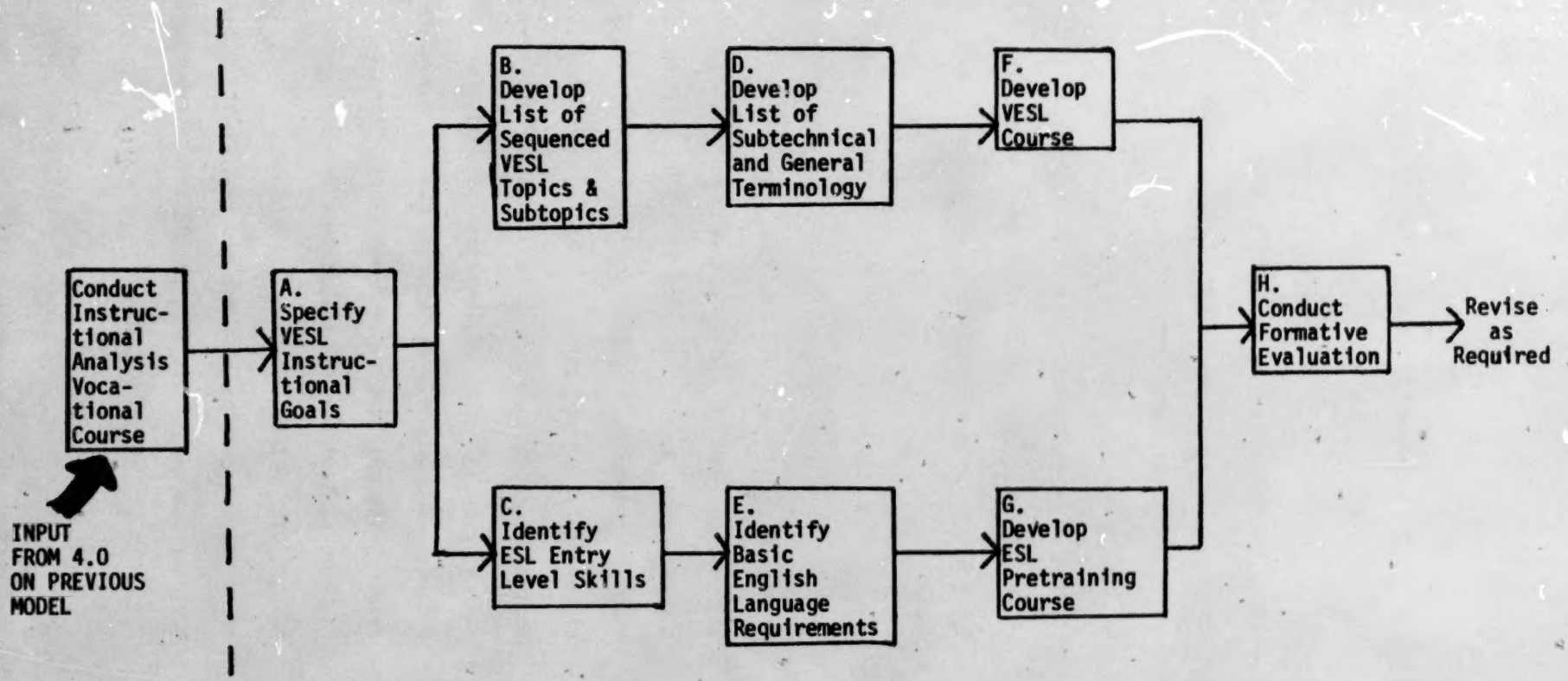

INPUT FROM 4.0 ON PREVIOUS MODEL
Conduct Instructional Analysis Vocational Course
A. Specify VESL Instructional Goals
B. Develop List of Sequenced VESL Topics & Subtopics
C. Identify ESL Entry Level Skills
D. Develop List of Subtechnical and General Terminology
E. Identify Basic English Language Requirements
F. Develop VESL Course
G. Develop ESL Pretraining Course
H. Conduct Formative Evaluation
Revise as Required

FIGURE 4

English as a Second Language (VESL) can be defined as the teaching of special purpose English to LESA persons which utilizes the vocabulary, situations, and lexicon specific to a vocational field or job (Lopez-Valadez, 1978). In that line, it can be stated that the ESL Specialist's experience in vocational instruction/curriculum development is essential for creating VESL instructional classroom situations. Therefore, the input information is only a part of a very complex and cumbersome curriculum development process. It is essential that the LESA students learn the necessary language skills, grammar, and vocabulary to perform successfully both in the vocational classroom/laboratory and on the job.

Develop a list of sequenced VESL topics and subtopics, component B, takes in consideration the vocational course structural hierarchy already available through the reviewed and updated course outline. This is done to avoid job duplication and to achieve the expected one-to-one correspondence between vocational instruction and VESL instruction. Under component D, Develop list of subtechnical and general terminology, all terms are classified and listed according to the pre-identified vocational topics and subtopics. In addition, the ESL specialist with the assistance of the SME, analyze the vocational course in terms of priority of the following language skill areas: listening, speaking, reading, and writing. An example of the language skills assessment for the Machine Tool Operations programs is displayed in Appendix VI. Develop VESL course, which is component F, constitutes the last component to be described to comply with the scope of this paper. According to pertinent experience at ECC, Mrowicki (1978 b) considered the following

segments within a VESL component: course overview, terminal behavioral objectives or instructional goals, methodology, VESL topics. The last segment also included: vocabulary study, grammar study, and reading. The previously outlined segments of the VESL component for ECC's Machine Tool Operations program are displayed in Appendix VII.

In summary, it can be expressed that VESL components are conceived to provide support to the LESA student, equipping him/her with the required English skills to allow a transfer of acquired language knowledge to the technical activities carried out by the vocational instructor.

TEACHING THE VOCATIONAL CLASS IN AN ESL CONTEXT

The Bilingual Access Instructional Delivery model calls for vocational instruction delivered using an "ESL Context" concept. This ESL context is described below in relation to the actual vocational instruction as well as the instructional events that should take place in the classroom to produce effective learning. Instructional events are activities that make up instruction for any single behavioral objective to be achieved by the learner within a lesson. Gagne and Briggs (1974) stated the following instructional events as a means to activate and support the internal processes of learning:

1. Gaining attention
2. Informing the learner of the objective
3. Stimulating recall of prerequisite learnings
4. Presenting the stimulus material
5. Providing learning guidance
6. Eliciting performance
7. Providing feedback about performance correctness
8. Assessing the performance

9. Enhancing retention and transfer

Not all instructional events are invariably used and some are made to occur by the teacher, some by the learner, and some by the instructional materials. Gagne and Briggs (1974) suggested a set of ideal external and internal conditions to the learner within the delivery of instruction in a typical classroom situation. Such an arrangement would mean that subject-matter content is presented considering the appropriate instructional events, thus helping create student's positive attitude toward learning and that adequate hard learning materials are in existence. Delivery of instruction to LESA students goes beyond all previous considerations, and it is due to this new condition--the presence of LESA students in the classroom/lab environment--that the ESL context concept comes about. In fact, because of the intrinsic characteristics of the LESA students, the vocational/para-vocational instructor is asked to generate an ESL context to produce effective learning upon those students. The following "do's" and "don'ts" could be taken into consideration to produce an ESL context framework:

1. Simplify your English whenever possible.
   a. Keep the vocabulary as simple as possible.
      Example: Use the word "turn" instead of "rotate".
   b. Keep the grammatical structures as simple as possible.
      Example: Use the active instead of the passive.
      Passive: The lathe is started by pushing the button.
      Active: You start the lathe by pushing the button.
   c. Break longer sentences into short simple ones.
      Example: (longer sentence) You remove the tools which are mounted in the back by turning the headwheel counterclockwise.

Example: (shorter sentence) Look at the tools mounted in the back. You remove these tools by turning the headwheel counterclockwise.

d. Speak at a normal or a little-slower-than-normal pace.

Comment: Do not speak too slowly. Sometimes slow speech is as difficult to understand as fast speech.

e. Try to speak with a neutral accent.

Comment: Avoid a regional accent if your students might have difficulty understanding it.

f. Do not use slangs.

2. Introduce concepts in a number of ways.

Comment: Do not always rely on a lecture to get a point across.

Alternative: Try demonstrating or using diagrams, charts, or audio-visual aids to teach a concept.

3. Check concept-comprehension in ways in which even the most limited English speaker can respond.

Comment: Instead of long verbal responses, have the student demonstrate the task.

Comment: When asking questions, ask "yes/no" questions first, then "or" questions, and finally "wh" questions. The "What", "Where" type of question is the most difficult to answer because it involves the most English production on the part of the student.

Comment: Accept all answers which contain correct information. Do not point out grammatical mistakes. If you do, your students might become too self-conscious to respond.

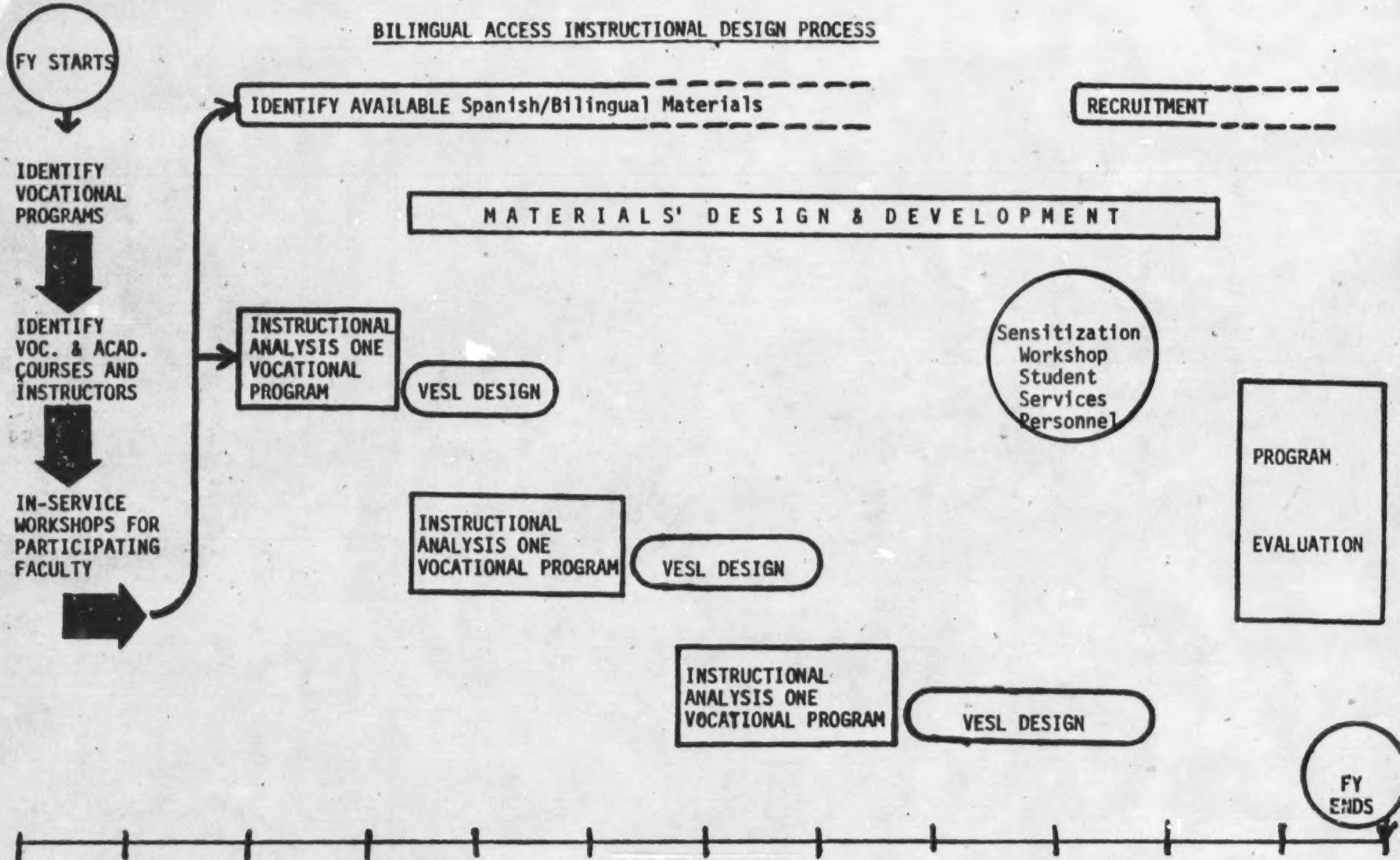
4. Remember, in your vocational class, communication is the primary goal.

SEQUENCE OF MILESTONES WITHIN THE BILINGUAL ACCESS INSTRUCTIONAL DESIGN PROCESS

Within each fiscal year during the five-year period, a series of milestones are identified as shown in Figure 5. The identification of vocational programs brings about the subsequent identification of vocational and para-vocational faculty members that will be collaborating with the bilingual project during any given fiscal year. With the support of the deans, the COPA director, and the AIDP faculty development coordinator, In-Service Workshop activities are conducted for participating ECC faculty including ESL/VESL staff members. This is a one-day workshop dealing with the developmental procedures of the Bilingual Access Program during that particular fiscal year. Considerations are given to project overall philosophy and orientation, bilingual and ESL/VESL curriculum development, tasks and deadlines to be met and delineation of responsibilities among parties involved within the various activities. Bilingual and ESL/VESL curriculum development are accomplished according to the pre-planned sequence and deadlines. At the beginning of the period, a national and international survey is initiated in order to identify available bilingual/Spanish resources that could be applicable to the selected vocational programs. The

SEQUENCE OF MILESTONES

BILINGUAL ACCESS INSTRUCTIONAL DESIGN PROCESS



KOTESKY, 1978-79

FIGURE 5

materials' design and development process is a continuous process which takes in consideration internal and external constraints in terms of final product development. Bilingual-vocational programs are offered during the fall semester and the outreach and recruitment process is initiated around the 9th month of the fiscal period. Sensitization workshop activities are also conducted around that time to help create within the institution a receptive climate toward the LESA students. A program evaluation report is completed at the end of the fiscal year according to federal guidelines.

CONCLUSIONS

The following are the main conclusions of this paper:

The Bilingual Access Program at Elgin Community College is a unique approach to bilingual/vocational education and can be considered a model program in the United States.

The output products developed under the BAP are self-contained instructional materials, and they can be used at anytime by the institution using its available human and non-human resources, thus it is more cost-effective than other bilingual/vocational models.

Spanish/bilingual supplemental learning aids and ESL/VESL components open college level training opportunities to LESA students, locating them in a successful competing position with Anglo students.

The Bilingual Access model could be used in the United States not only for Spanish speakers, but for other limited English-speaking groups existing in this country.

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APPENDIX I

ECC REGULAR VOCATIONAL PROGRAMS	DATE OF IMPLEMENTATION
MACHINE TOOL OPERATIONS	FALL 1978
WELDING	FALL 1979
CULINARY ARTS	FALL 1979
RESTAURANT MANAGEMENT	FALL 1979
PLASTICS PROCESSING & MANUFACTURING	FALL 1979
SECRETARIAL SCIENCE	FALL 1979
GROUP CHILD CARE	FALL 1980
AUTOMOTIVE SERVICE TECHNOLOGY	FALL 1980
EMERGENCY MEDICAL TECHNOLOGY	FALL 1981
DENTAL ASSISTING	FALL 1981
ALL BILINGUAL PROGRAMS WILL BE CONTINUOUSLY IN OPERATION	FALL 1982

VI (AW) Controlling Bead Placement, Shape and Contour

The student will be able to manipulate the electrode to control bead placement, shape and contour in a variety of joint configurations.

VII (AW) Determining What Constitutes Good Weld Appearance

The student will be able to perform a weld of a proper bead appearance, including appropriate ripple shape, spatter control, and bead size.

VIII (AW) Electrode Selection and Identification

The student will be able to identify and choose the appropriate electrode for a particular required weld.

IX (AW) Welding Power Sources

The student will be able to identify controls on a variety of power sources used in Shield Metal Arc Welding.

TOPICS AND SUBTOPICS FOR ARC WELDING

I (AW) Introduction to Shielded Metal Arc Welding

- A. Definition of Welding
- B. History and Future of Arc Welding
- C. Applications of Arc Welding
- D. Essentials for Producing a Good Arc Weld

II (AW) Safety

- A. General
  - 1. Attitude
  - 2. General Equipment Use
  - 3. Safety Devices Use
- B. Arc Welding
  - 1. Hazards
  - 2. Equipment Use
  - 3. Protecting Clothing/Equipment
  - 4. Weld Cleaning Tools

III (AW) Setting Up

- A. Locating Tools and Power Source
- B. Obtaining and Preparing Parent Metal
- C. Locate Required Electrode

III (AW) Setting Up (Cont.)

- D. Proper Placement of Electrode in Holder
- E. Welding Power Source Preparation
  1. Selection of Proper Polarity and Ampherage
  2. Placement of Ground Clamp
  3. Activation of Power Source

IV (AW) Striking and Controlling the Arc

- A. Methods of Striking Arc
  1. Tap Method
  2. Scratch Method
- B. Maintaining Arc Length
  1. Observe Sound
  2. Observe Amount of Light
  3. Observe Spatter Generation
- C. Filling Craters

V (AW) Controlling Electrode Travel Speed

- A. Proper Bead Width
- B. Proper Bead Height
- C. Weaving

VI (AW) Controlling Bead Placement, Shape and Contour

- A. Lap Weld
- B. Tee Weld
- C. Butt Weld

VII (AW) Determining What Constitutes Good Weld Appearance

- A. Ripples
- B. Spatter
- C. Bead Size

VIII (AW) Electrode Selection and Identification

- A. Base Metal Mechanical Properties
- B. Base Metal Composition
- C. Welding Position
- D. Polarity
- E. Penetration Characteristics
- F. Metal Thickness
- G. Service Conditions
- H. Deposition Rates
  1. Fast Freeze Types
  2. Fast Fill Types
  3. Fill-Freeze Types

INSTRUCTIONAL ANALYSIS SHEET

AIDP/BILINGUAL-VOCATIONAL PROGRAM

ELGIN COMMUNITY COLLEGE

Course: Machine Tool Processes I (MTO-105)

Instructional Analysis Conducted by: Mr. Maurice Munch (Voc. Instr
Dr. Arturo Kotesky (B-V Coord

Date of Analysis: June, 1978

Topic #	Name of Topic or Subtopics	Activities: Description	Type: CR	Type: LAB	Time: hours	Current Support Materials	Tentative Support Materials for B-V Program	Unique Language and Terminology
2 (A)	Measuring Tools; types, uses, accuracy	Study of different kinds of linear type measuring tools				Text - Chapter 2 Hands-on Experience	Varios Instrumentos de Medicion	different similar kind type linear type measure/ment tool scale measurement scale
Instructional Objective →	SWBAT identify and manipulate linear type measuring tools and their specific scales		.5		.5			
S.T. # 2A-1 SUB → TOPICS	Semi-Precision Measuring Tools: Steel Rule and its Counterparts	Study and perform measurement of linear dimensions using rough measuring tools	.5		.5	Text - Chapter 2 Hands-on APPENDIX III	Measurement Skills (Film-strip/Sound materials in a Bilingual Mode with technical terms in English)	linear non-linear rough-fine rule steel rule inch subdivisions part of an inch smaller equal larger

Sub Topic #	Name of Subtopic	Activities: Description	Type: CR	Type: LAB	Time: Hours	Current Support Materials	Tentative Support Materials for B-V Program	Unique Language and Terminology
S.T. #	2A-2							
SUB	Semi-Precision Measuring Tools: Combination Set	Study and manipulate a variety of accessories of steel rules	.5		.5	Text - Chapter 2 Variety of Instruments		linear square angle protractor center trace layout precision
TOPICS	2A-3 Semi-Precision Measuring Tools: Depth Gages	Study and manipulate more precise linear measuring instruments	.5		.5	Text - Chapter 2 Demonstrations Hands-on	Depth Gages (Film-Strip/Sound Bilingual materials with technical terms in English)	accessory base base accessory slide precise precision

DEPTH GAGES

HISTORIA No. 4

A. THIS SPANISH TAPE HAS BEEN TRANSLATED WITH THE AUTHORIZATION OF BERGWALL PRODUCTIONS OF GARDEN CITY, NEW YORK, AND IMPLEMENTED BY THE BILINGUAL ACCESS PROJECT -- ADVANCED INSTITUTIONAL DEVELOPMENT PROGRAM -- AT ELGIN COMMUNITY COLLEGE, PROJECT COORDINATOR IS DR. ART KOTESKY.

B. ESTA CINTA HA SIDO PREPARADA CON LA AUTORIZACION DE LA BERGWALL PRODUCTIONS OF GARDEN CITY, NEW YORK, BAJO EL PROJECTO DE ACCESO BILINGUE DE LA UNIVERSIDAD BASICA DE ELGIN, COORDINADO POR EL DR. ARTURO KOTESKY.

C. AL ESTUDIANTE LE DECIMOS QUE AL TRABAJAR CON LA CINTA USE LA NARRACION ESCRITA CORRESPONDIENTE. LOS TERMINOS TECNICOS NO HAN SIDO TRADUCIDOS, YA QUE ES ASI COMO DEBES APRENDERLOS Y USARLOS! TOMA NOTA DE ELLOS SI LO CREES NECESARIO!

D. POR FAVOR AVANZA EL FILMSTRIP AL CUADRO QUE MUESTRA EL SIGUIENTE TITULO: MEASURING TOOLS EXPLAINED.

E. DETIENE LA CINTA PARA QUE LO ENCUENTRES CON FACILIDAD -- Y UNA VEZ QUE LO HAYAS ENCONTRADO -- REINICIA LA CINTA.

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1. ESTA HISTORIA SE TITULA, EXPLICACION SOBRE HERRAMIENTAS DE MEDIDA.

2. DEPTH GAGES

3. ESTA HISTORIA SE REFIERE A NUEVOS INSTRUMENTOS DE MEDIDA DE PRECISION. ESTA NO ES NADA SIMILAR A LO QUE HEMOS VISTO HASTA AHORA.

4. PRIMERO VAMOS A VER UNA VERSION SIMPLE. ESTA ES UNA REGLA SIMPLE CON UNA SLIDING HEAD QUE SE PUEDE FIJAR. SE USA CUANDO LAS MEDIDAS NO TIENEN QUE SER MUY EXACTAS, PORQUE LA ESCALA ESTA DIVIDIDA EN 32AVOS DE PULGADA.

5. PARA MEDIR LA PROFUNDIDAD DE UN AGUJERO EN LA PIEZA, LO UNICO QUE TIENES QUE HACER ES AFLOJAR LA HEAD Y EMPUJAR LA ESCALA HASTA QUE TOQUE EL FONDO.

6. LA LECTURA ES UN POCO MAS DE 2-1/4". SI NECESITAS UNA MEDIDA MAS EXACTA QUE ESTA — TIENES QUE USAR EL SIGUIENTE DEPTH GAGE.

7. AQUI LO TIENES — UN MICROMETER DEPTH GAGE. PUEDE MEDIR HASTA UNA MILESIMA DE PULGADA. LA VARILLA EN EL GAGE SE USA PARA MEDIR PROFUNDIDADES HASTA DE UNA PULGADA. LAS OTRAS 2 VARILLAS MIDEN AGUJEROS DE UNA PULGADA A DOS PULGADAS Y DE DOS PULGADAS A TRES PULGADAS.

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8. YA SABES QUE EL AGUJERO MIDE MAS DE DOS PULGADAS DE PROFUNDIDAD. POR ESO SE HA USADO LA VARILLA MAS LARGA. LA BASE DEL MICROMETRO

ES SOSTENIDA FUERTEMENTE CONTRA LA PIEZA. Y EL THIMBLE SE GIRA HASTA QUE LA VARILLA TOQUE EL FONDO DEL AGUJERO.

9. AHORA, PODRAS LEER LA PROFUNDIDAD CON MAS PRECISION -- DOS PULGADAS Y 270 MILESIMAS DE PULGADA. UN POCO MAS DE 2-1/4" -- .020" MAS.

10. ESTA ES OTRA PIEZA DE TRABAJO, LA CUAL ESTA FRESADA CON MUCHAS RANURAS. LA REGLA DE METAL SE PUEDE USAR PARA MEDIR LA PROFUNDIDAD DE LA RANURA. TIENE MAS O MENOS UNA PROFUNDIDAD DE MEDIA PULGADA.

11. PERO, SI TU NECESITAS UNA RESPUESTA MAS EXACTA A LA MILESIMA DE PULGADA, USA EL DEPTH GAGE. USA LA VARILLA MAS CORTA, YA QUE LA PROFUNDIDAD ES MENOS DE UNA PULGADA.

12. UNA AMPLIACION DE LA ESCALA EN EL BARREL, TE DICE QUE LA RANURA TIENE CINCO MILESIMAS MAS ALLA DE MEDIA PULGADA. EL TOTAL ES .505 MILESIMAS DE PULGADA.

13. AHORA, VAMOS A OBSERVAR LA DIFERENTES PARTES DE ESTE DEPTH GAGE. LA BASE ESTA CURVADA PARA QUE COLOQUES LOS DEDOS. TIENES QUE SUJETAR LA BASE FUERTEMENTE CONTRA LA PIEZA DE TRABAJO.

14. ESTE ES EL BARREL Y SU ESCALA. LA ESCALA ESTA INVERTIDA -- SE LEE DE DERECHA A IZQUIERDA.

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15. ASI COMO LOS DEMAS MICROMETROS, ESTE TIENE UN THIMBLE CON 25 LINEAS. CUANDO VAYAS A LEERLO HAZLO CON CUIDADO PUES ES MUY FACIL DE COMETER ERRORES.

APPENDIX V

LISTA DE MATERIALES DE AYUDA/CURSO: MTO-105

LIST OF SPANISH INSTRUCTIONAL AIDS/CURSO: MTO-105

AIDP/BILINGUAL ACCESS PROGRAM

ELGIN COMMUNITY COLLEGE

Prepared by: Dr. Arturo A. Kotesky (B-V Coord.)

Date: July 31, 1978

RLRC PERSONNEL INFORMATION
INFORMACION DEL ESTUDIANTE
PARA SOLICITAR EL MATERIAL

INSTRUCTOR'S INFORMATION

MATERIAL # AID #	TITULO DEL MATERIAL DE AYUDA TITLE OF INSTRUCTIONAL AIDS	TYPE OF MATERIAL	TOPICS COVERED IN OUTLINE
1	Lista De Materias MTO-105	Print	Course Outline
2	Conocimientos Basicos de Talleres	Print	1A 1B
3	Organizacion y Funcionamiento de Talleres	Print	1C
4	Varios Instrumentos de Medicion	Print	2A 2B
5	Measurement Skills	Tutorial Kit English/Spanish	2A-1 2B-1
6	Depth Gages	Film Strip/ Spanish sound and script	2A-3
7	Micrometro y Vernier	Print	2B-4 2B-5
8	The Outside Micrometer	Film Strip/ Spanish sound and script	2B-4
9	The Inside Micrometer	Film Strip/ Spanish sound and script	2B-4

APPENDIX VI

Mrowicki
9/18/78

Language SKills Assessment Form

Vocational ARea Machine Tool Operatisons

Rank of Importance	Skill	Situations
1	Oral Comprehension	Listening to lectures & deomstrattions.
		Following directions.
		Reäating to techinal terms.
3	Speaking	Reäating to machining operations.
		Asking questions.
		Requesting assitance,
		Requesting materials.
2	Reading	Reading Machien Shop assignments.
		Reading technäical terms.
		Reading blueprint notes.
4	Writäng	Answering questions in work study guide.
		Writing requisistions.
		Filling out applications.

Write sentences using the words below.

1. safety glasses - wear

2. material - food - hand

3. picture - show-- machine

4. he - write - accident report

5. accident report - write - employee

6. report - take - to the supervisor

7. numbers - hide

8. metal - cut -- saw

9. saw - cut -- metal

10. material - hold - by the vise

11. vise - hold - material

APPENDIX VII

TOPIC SEVEN

VOCABULARY STUDY

classifications
brand
standard
production series
long/short

You are going to study lathes next. In discussing lathes, you will talk about the size of the lathes and the classifications of the operations lathes can perform. There are two classifications (kinds) of operations that a lathe can do. There are different brands (names) of lathes. Some lathes are referred to as standard-they meet certain size, weight, quality requirements. You will hear the words production series when talking about lathes. Production series refers to the number of products made in a certain way. Production series can be long or short.

What are you going to study next?
How many classifications of operations can a lathe perform?
How many classifications of ESL students does COPA have?
What are they?
Name some brands (kinds) of cigaretts (clothing, candy bars)
What kinds of things does the word "standard" refer to?
What does standard mean when referring to a car?
What does "produce" ("production series") mean?
What does the "World Series" mean?
How often does the production series of a car change?

accesory
attachment
attach
shaper
shape

Lathes have different accessories or parts which can be attached to them. Another word for accessory is attachment. You put on (attach) an attachment. One kind of attachment is called a shaper. It shapes (makes the material into a different shape).

What is another word for accessory?
What is the verb for attachment?
Name some tools that have attachments.
Circular refers to the shape of a circle. What other words refer to shape?

diameter
turn
revolution
rpm

Think about a circle. It has a diameter and a circumference. (Instructor: Draw a circle on the blackboard and show its diameter and circumference). Many circular parts are classified according to their diameter. Some blades are circular. We often refer to their movement by telling how many turns (revolutions) they make in a minute. We call this RPM

What is a "diameter" ("circumference)?
What's the diameter of a car (bike) tire?
Do you know what the relationship between the diameter and the circumference of a circle is?
What does RPM mean? What RPM's do records make?

Exercise One

Follow the instructions.

1. How many classifications of operations can a lathe perform? _____

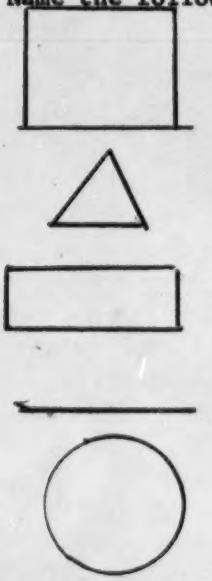
2. Name some brands of gasoline: 1._____

   2._____ 3._____

3. Name some kinds of gasoline: 1._____

   2._____ 3._____

Name the following pictures. Describe the shapes



Names	Shapes
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

5. Name a tool that has an attachment. _____

6. What does RMP mean? _____

7. What is a work that means: every day _____

   every year _____

   every week _____

   every month _____

GRAMMAR STUDY

Passive - present, irregular verbs

With irregular verbs, the passive is formed by using "in/are + third verb form".

Example: The report is written. The reports are written.

Some of the most important irregular verbs for you are listed below.
Study the forms!

read	read	read	drive	drove	driven
feed	fed	fed	write	wrote	written
meet	met	met	ride	rode	ridden
keep	kept	kept	get	got	gotten
feel	felt	felt	see	saw	seen
mean	meant	meant	go	went	gone
leave	left	left	show	showed	shown
lose	lost	lost	break	broke	broken
cut	cut	cut	grow	grew	grown
hit	hit	hit	know	knew	known
put	put	put	throw	threw	thrown
net	net	net	eat	ate	eaten
lend	lent	lent	give	gave	given
send	sent	sent	come	came	come
build	built	built	draw	drew	drawn
hold	held	held	take	took	taken
make	made	made			
stand	stood	stood			
buy	bought	bought			